

(Japanese patent application laid open No. 56-100145)

Brief Description of the Drawings

Fig. 1 is a schematic diagram illustrating a method of manufacturing a silica glass in accordance with the present invention, (a) shows the gel fosterage step, (b) shows the freeze dry step, and (c) shows the step of converting into transparent glass

Reference Numerals

1--- hydrolysis container, 2--- silicate gel, 2'--- porous gel, 3--- cooling and dehydration container, 4a, 4b, 4c--- valve, 5--- vacuum pump, 6--- electric furnace, 7--- hydrating agent liquid holder

Claims

"A method of manufacturing a silica glass, the method comprising the steps of:
forming silica gel in response to a hydrolysis reaction in liquid phase of a silica compound which is hydrolysable;
vacuum dehydrating said silica gel after cooling and freezing it; and
converting said silica glass into transparent glass by heating it in an atmosphere including a halogen dehydrating agent."

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"In accordance with the prior art, the diameter of a fine pore is small by constricting silica gel hard because of merely heating and dehydrating silica gel without cooling, freezing and vacuum dehydrating silica gel. However, in accordance with the present invention, cracks by contractions are not generated because of vacuum dehydrating silica gel after cooling and freezing, and the diameter of a fine pore is big without changes.

Porous gel vacuum dehydrated as stated above is heated in an atmosphere including a halogen dehydration agent and converted into transparent glass. This halogen dehydration agent is for removing an OH group existing within porous gel and a silica glass and can use, for example, SOCl_2 , SO_2Cl_2 , S_2Cl_2 , Cl_2 , CCl_4 , etc.

Next, an embodiment of a method of manufacturing a silica glass in accordance with the present invention is described as follows."

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"As described above, in accordance with the present invention, by applying a freeze-drying method in case of manufacturing a silica glass by a gel process, it is easy to manufacture gel having the big diameter of a fine pore, and it is easy to avoid cracks of gel, dehydrate the gel in an atmosphere including a halogen dehydration agent, and converting the gel into transparent glass. Therefore, a big absolute silica glass could be manufactured. Consequently, the present invention has a dramatic effect on the field of an optical communication fiber manufacture that, especially, a high quality silica glass is required."